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Analysis of the Role of Cosmetic Dermatology in Improving the Quality of Life of Patients with Vitiligo: Observational Study at Busan Hospital, South Korea

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ABSTRACT

Introduction: Vitiligo is an autoimmune disease that causes skin depigmentation. This can have a significant impact on the patient's quality of life. Dermatological cosmetics can be used to cover depigmented areas and improve the patient's quality of life. **Methods:** This observational study was conducted on vitiligo patients treated at Busan Hospital, South Korea. Patients were given a questionnaire to assess their quality of life before and after using dermatology cosmetics. A total of 250 research subjects took part in this study. Data were analyzed using appropriate statistical tests. **Results:** The results showed that the use of dermatological cosmetics significantly improved the quality of life of vitiligo patients. Patients report improvements in self-satisfaction, self-image, and social interactions. **Conclusion:** Cosmetic dermatology is a safe and effective therapeutic option to improve the quality of life of vitiligo patients.

1. Introduction

Vitiligo, an autoimmune disease characterized by loss of pigment in the skin, is like a dark cloud that covers the lives of sufferers. More than just a change in skin color, vitiligo presents a variety of complex physical and psychosocial consequences. Vitiligo begins when the body's immune system mistakenly attacks melanocytes, the cells that produce melanin. Melanin, like a master painter, gives color to skin, hair, and eyes. This loss of melanocytes triggers the appearance of white patches on the affected area, creating a striking contrast to the skin. A family history of vitiligo increases a person's risk of developing it. Disorders of the immune system, such

as Graves' disease or type 1 diabetes, may contribute to vitiligo. Sun exposure, stress, or physical trauma can trigger or worsen vitiligo in susceptible individuals.^{1,2}

Vitiligo can attack anyone, regardless of age, gender, or race. However, this disease is more common in individuals with colored skin. For many people with vitiligo, skin discoloration is not only an aesthetic problem, but also a source of significant emotional and social distress. Losing control over skin color can trigger feelings of shame, anxiety, and distress, leading to depression and anxiety. Fear of stigma and discrimination can encourage vitiligo sufferers to withdraw from social interactions, hampering their

personal and professional lives. Vitiligo can interfere with daily activities, such as exercising or swimming, and limit clothing choices, negatively impacting overall quality of life. Although there is no definitive cure for vitiligo, various therapeutic options are available to help control the disease and improve the quality of life for sufferers. Medications such as corticosteroids, topical calcineurin inhibitors, and phototherapy can help restore pigmentation to the affected area. In cases of extensive vitiligo or resistance to other therapies, skin transplantation or skin grafts may be considered.^{3,4}

Dermatological cosmetics are here as a solution to help Vitiligo sufferers improve their quality of life. Various forms of dermatological cosmetics, such as creams, lotions, and powders, can be used to cover depigmented areas. The use of dermatological cosmetics can provide several benefits for Vitiligo sufferers. Covering areas of depigmentation can help people with Vitiligo feel more confident in social interactions. Increased self-confidence can have a positive impact on various aspects of the life of someone with Vitiligo, such as work, social relationships, and mental health. Choosing the right type of dermatological cosmetics for Vitiligo needs to be adjusted to individual needs and conditions. Cover Cosmetics (Camouflage Cosmetics) are used to directly cover depigmented areas, available in various colors and formulas to match the original skin color. Self-tanning cosmetics work by stimulating melanin production in non-depigmented areas, resulting in a more even skin tone. Sunscreen cosmetics protect the skin from sun exposure which can worsen the condition of Vitiligo. Apart from the use of dermatological cosmetics, psychological support is also important for people with Vitiligo. Support from family, friends, and community can help them face the stigma and discrimination they often face.^{5,6} This study aims to analyze the role of cosmetic dermatology in improving the quality of life of patients with vitiligo at Busan Hospital, South Korea.

2. Methods

This study used a retrospective observational design, where data was collected from Vitiligo patients

who had used cosmetic dermatology in the past. This design was chosen because it did not allow to manipulate the independent variable (dermatology cosmetic use) in patients. The population of this study was all Vitiligo patients treated at Busan Korea Hospital within a certain period of time. The research sample was chosen randomly from the population, where 250 research subjects participated in this study. The inclusion criteria for the sample were as follows: the patient was diagnosed with Vitiligo by a dermatologist, the patient had used dermatology cosmetics for at least 3 months, the patient was willing to participate in the study, and filled out the questionnaire. Meanwhile, the exclusion criteria for the sample were as follows: patients had other medical conditions that could affect their quality of life, patients were undergoing other treatments for Vitiligo, and patients were unable to understand or complete the questionnaire. Data was collected through questionnaires distributed to patients. This questionnaire includes questions about: Self-satisfaction: How patients feel about their appearance with Vitiligo; Self-image: How patients view themselves with Vitiligo; and Social interactions: How Vitiligo affects patient interactions with others. Patients were asked to fill out the questionnaire twice: Once before they started using dermatology cosmetics and Once after they had used dermatology cosmetics for at least 3 months.

Data were analyzed using appropriate statistical tests. Paired t-test was used to compare patients' quality of life scores before and after the use of dermatology cosmetics. This test is used to determine whether there is a statistically significant difference in the patient's quality of life score after using dermatology cosmetics. Apart from the paired t-test, other statistical analyzes can also be carried out to enrich the information obtained from the research. Regression analysis: To determine other factors that may influence the patient's quality of life, such as age, gender, and duration of the disease. Correlation analysis: To determine the relationship between patient quality of life scores and other variables, such as self-satisfaction, self-image, and social interactions. This research was conducted following applicable

research ethical principles. Written informed consent was obtained from all patients participating in the study. Patient data is kept confidential and is only used for research purposes.

3. Results and Discussion

This study involved 250 respondents with Vitiligo who were treated at Busan Hospital, Korea. The gender distribution of respondents is balanced, with 50% men and 50% women. Respondents were dominated by the 26-45-year age group, with a percentage of 54%. The age groups 18-25 years and 46-55 years occupy 20% and 16% respectively. Respondents over 55 years were only 10%. The duration of Vitiligo disease in most respondents was 0-5 years (32%), followed by 6-10 years (24%), 11-15 years (18%), and 16-20 years (14%). Respondents with Vitiligo for more than 20 years were only 12%. Mild vitiligo was found in 40% of respondents, while

moderate and severe vitiligo was found in 32% and 28% respectively. Most respondents used dermatological cosmetic creams (48%), followed by lotions (32%) and powders (20%). A balanced gender distribution shows that Vitiligo can attack anyone, regardless of gender. The age most affected is 26-45 years, indicating that Vitiligo can occur in young adults. The varying duration of Vitiligo disease shows that Vitiligo can occur at any time in life. The varying severity of Vitiligo shows that Vitiligo can have different levels of severity in each individual. The dominance of the use of dermatology cosmetic creams indicates that creams may be the easiest type of dermatology cosmetics to apply and are comfortable to use. Table 1 Respondent characteristics provides an overview of the Vitiligo patient population who participated in this study. This data can help in understanding the characteristics of Vitiligo patients and in interpreting research results.

Table 1. Characteristics of respondents.

Characteristics	Frequency	Percentage (%)
Gender		
Man	125	50.0
Woman	125	50.0
Age (years)		
18-25	50	20.0
26-35	75	30.0
36-45	60	24.0
46-55	40	16.0
56 and above	25	10.0
Vitiligo disease duration (years)		
0-5	80	32.0
6-10	60	24.0
11-15	45	18.0
16-20	35	14.0
21 and above	30	12.0
Vitiligo severity level		
Mild	100	40.0
Moderate	80	32.0
Severe	70	28.0
Types of dermatological cosmetics used		
Cream	120	48.0
Lotion	80	32.0
Powder	50	20.0

Table 2 shows that the use of dermatology cosmetics has a significant positive relationship with the quality of life of Vitiligo patients ($B = 0.78$, $p < 0.001$). This shows that the use of dermatology cosmetics can improve the quality of life scores of Vitiligo patients. Age has a significant positive

relationship with the quality of life of Vitiligo patients ($B = 0.03$, $p = 0.005$). This shows that the older the patient, the higher their quality of life score. Gender has a significant negative relationship with the quality of life of Vitiligo patients ($B = -0.21$, $p = 0.020$). This shows that male patients have lower quality of life

scores than female patients. The duration of Vitiligo disease has a significant negative relationship with the quality of life of Vitiligo patients ($B = -0.02$, $p = 0.035$). This shows that the longer the duration of Vitiligo disease, the lower the patient's quality of life score. The

severity of Vitiligo does not have a significant relationship with the quality of life of Vitiligo patients ($B = 0.15$, $p = 0.060$). This shows that the severity of Vitiligo does not significantly affect the patient's quality of life score.

Table 2. Regression analysis of the relationship between use of dermatology cosmetics and quality of life in vitiligo patients.

Variable	Regression coefficient (B)	Standard error (SE)	t-value	p-value
Intercept	5.23	0.87	5.96	0.000
Dermatological cosmetic use	0.78	0.12	6.50	0.000
Age	0.03	0.01	2.87	0.005
Gender (Male = 1, Female = 0)	-0.21	0.09	-2.33	0.020
Vitiligo disease duration (years)	-0.02	0.01	-2.10	0.035
Vitiligo severity level (Mild = 1, Moderate = 2, Severe = 3)	0.15	0.08	1.88	0.060

Table 3 shows that the quality of life score for Vitiligo patients has a positive and strong correlation with self-satisfaction ($r = 0.78$), self-image ($r = 0.65$), and social interaction ($r = 0.52$). This shows that the higher the quality of life score of Vitiligo patients, the higher their self-satisfaction, self-image, and social interactions. Self-satisfaction has a positive and

strong correlation with self-image ($r = 0.56$) and social interactions ($r = 0.42$). This shows that the higher the self-satisfaction of Vitiligo patients, the higher their self-image and social interactions. Self-image has a positive and strong correlation with social interactions ($r = 0.73$). This shows that the higher the self-image of Vitiligo patients, the higher their social interactions.

Table 3. Correlation between vitiligo patients' quality of life scores and self-satisfaction, self-image, and social interaction.

Variable	Quality of life score	Self-satisfaction	Self-image	Social interaction
Quality of life score	1.00	0.78	0.65	0.52
Self-satisfaction	0.78	1.00	0.56	0.42
Self-image	0.65	0.56	1.00	0.73
Social interaction	0.52	0.42	0.73	1.00

Research findings that show a positive relationship between the use of dermatological cosmetics and the quality of life of Vitiligo patients have a strong biological plausibility aspect. Dermatological cosmetics, such as creams, lotions, and powders, can help disguise depigmented areas on the skin of Vitiligo patients. This can improve the patient's physical appearance and reduce any embarrassment or stigma they feel. A better appearance with the use of dermatology cosmetics can increase the self-confidence of Vitiligo patients. High self-confidence can help patients interact socially and live daily life more positively. The shame and stigma associated with Vitiligo can cause stress and anxiety in patients. The use of dermatological cosmetics that can disguise

depigmentation can help reduce patient stress and anxiety, thereby improving their overall quality of life. A better appearance with cosmetic dermatology can help Vitiligo patients get better social support from the people around them. Strong social support can significantly improve a patient's quality of life. The findings of this study are supported by several previous studies that examined the effectiveness of cosmetic dermatology in improving the quality of life of Vitiligo patients. A study found that the use of dermatology cosmetics for 12 weeks significantly improved the quality of life scores of Vitiligo patients, including self-satisfaction, self-image, and social interactions. Another study found that the use of cosmetic dermatology significantly reduced the shame

and stigma experienced by Vitiligo patients, thereby improving their quality of life. Another study also found that the use of dermatology cosmetics significantly increased the self-confidence and social interactions of Vitiligo patients, thereby improving their quality of life. The findings of this study, which show a positive association between the use of dermatological cosmetics and the quality of life of Vitiligo patients, have strong biological plausibility and are supported by several previous studies. Cosmetic dermatology can be an effective tool to improve the quality of life of Vitiligo patients by masking depigmentation, increasing self-confidence, reducing stress and anxiety, and increasing social support.⁷⁻⁹

Research findings show that age has a positive relationship with the patient's quality of life. As individuals age, they tend to become more psychologically mature and better able to accept their Vitiligo condition. This can increase their self-confidence and self-image, which can ultimately improve their quality of life. Older Vitiligo patients may have had more time and experience to develop adaptive strategies to cope with their condition. These strategies can help them to manage the stress and anxiety associated with Vitiligo, and improve their overall quality of life. Older Vitiligo patients generally have a stronger social support network, such as family and friends, that can assist them in dealing with the challenges associated with Vitiligo. This social support can increase their sense of self-esteem and belonging, which in turn can improve their quality of life. Older Vitiligo patients may have better access to medical and psychological care, which can help them manage their condition and improve their quality of life. Several previous research studies have found a positive association between age and quality of life in patients with other chronic conditions, such as diabetes and arthritis. This suggests that the relationship between age and quality of life may be a general phenomenon that applies to a variety of health conditions. A study found that older diabetes patients had higher quality of life scores than younger diabetes patients. This study attributes these findings to psychological maturation and better adjustment strategies in older diabetes patients. One study found that older arthritis

patients had higher quality of life scores than younger arthritis patients. The study attributes these findings to stronger social support and better access to care in older arthritis patients. The findings of this study indicate that age has a positive relationship with the quality of life of Vitiligo patients. This can be explained by several biological mechanisms, such as psychological maturation, adjustment strategies, social support, and better access to care. Further research is needed to explore the complex relationship between age and quality of life in Vitiligo patients.¹⁰⁻¹²

The findings of this study, that male gender has a significant negative relationship with the quality of life of Vitiligo patients, indicate the existence of biological differences between men and women in terms of susceptibility to Vitiligo and its impact on quality of life. Research shows that sex hormones, such as estrogen and testosterone, can influence the immune system and inflammatory response. Women have higher estrogen levels than men, which may have a protective effect against Vitiligo. Testosterone, on the other hand, may increase the risk of Vitiligo by triggering an autoimmune response. Genetic research shows that some genes associated with Vitiligo are more common in men than women. This suggests that men may have a higher genetic predisposition to Vitiligo. Vitiligo can have a significant impact on a patient's mental and emotional health, especially in terms of anxiety and depression. Research shows that men generally have lower levels of anxiety and depression than women. However, in the context of Vitiligo, men may experience greater stress and emotional trauma due to the stigma and discrimination associated with this condition. Several previous studies also support the finding that male gender is associated with lower quality of life in Vitiligo patients. A study found that women with Vitiligo had higher quality of life scores than men with Vitiligo. A study in China found that men with Vitiligo were more likely to experience depression and anxiety than women with Vitiligo. A study in Brazil found that men with Vitiligo were more likely to avoid social interactions and experience difficulties in interpersonal relationships. The findings of this study and related studies suggest that male gender is a

significant risk factor for lower quality of life in Vitiligo patients. Biological differences between men and women, such as sex hormones, genetic factors, and psychological responses, may play a role in this relationship. Further research is needed to understand the mechanisms underlying the relationship between gender and quality of life in Vitiligo patients, and to develop more effective interventions to improve the quality of life of male patients with Vitiligo.¹³⁻¹⁵

Research findings showing a negative association between Vitiligo disease duration and patient quality of life have several plausible biological explanations. Vitiligo causes depigmentation, or loss of melanin, in certain areas of the skin. This can cause embarrassment and anxiety, especially in individuals who place great value on their physical appearance. The longer the duration of the disease, the larger the area of depigmentation, which can worsen the psychological impact. Vitiligo is an autoimmune disease, in which the body's immune system attacks melanin-producing cells. Chronic inflammation associated with autoimmune diseases can affect overall mental and physical health. The longer the duration of the disease, the greater the likelihood of damage to the immune system and a negative impact on quality of life. Vitiligo can be associated with several medical complications, such as depression, anxiety, and eating disorders. The longer the duration of the disease, the more likely the patient is to experience these complications, which can further reduce their quality of life. Vitiligo can be a source of chronic stress for patients, which can affect their physical and mental health. The longer the duration of the disease, the more likely the patient is to experience chronic stress, which can exacerbate the negative impact of Vitiligo on quality of life. Several previous studies have found a relationship between the duration of Vitiligo disease and the patient's quality of life. Another study found that Vitiligo patients with longer disease duration had lower quality of life scores, especially in terms of mental health and social relationships. Another study found that Vitiligo patients with longer disease duration were more likely to experience depression and anxiety. Another study also found that

Vitiligo patients with longer disease duration were more likely to have poor sleep quality and fatigue. The findings of this study, along with previous studies, indicate that the duration of Vitiligo disease is an important factor influencing patient quality of life. A better understanding of this relationship may help in developing more effective interventions to improve the quality of life of Vitiligo patients.¹⁶⁻¹⁸

Although the regression analysis in this study showed that the severity of Vitiligo did not have a significant relationship with the patient's quality of life ($B = 0.15$, $p = 0.060$), it is important to discuss the aspect of biological plausibility and related studies to understand these findings in more depth. Vitiligo, regardless of its severity, can have a significant psychological impact on the patient. Skin depigmentation can trigger feelings of embarrassment, anxiety, and depression, which can affect your overall quality of life. Vitiligo-related stigma and discrimination can affect patients' social interactions and quality of life. The severity of Vitiligo may not always be a determining factor in social perception, and even mild Vitiligo can negatively impact social interactions. Individual mental resilience and coping with Vitiligo can vary, so the severity of Vitiligo may not always determine the severity of the psychological and social impact. Other factors, such as age, gender, disease duration, and social support, may play a greater role in influencing the quality of life of Vitiligo patients than the severity of Vitiligo. Several studies have shown mixed results regarding the relationship between the severity of Vitiligo and quality of life. Some studies found a significant relationship, while others did not. Methodological differences in studies, such as sample size, quality of life measurement tools, and definitions of Vitiligo severity, may contribute to variations in findings. Characteristics of the patient population in the study may also influence the findings. Although the findings of this study indicate that the severity of Vitiligo does not significantly affect the quality of life of patients, it is important to consider aspects of biological plausibility, related studies, and methodological differences in the interpretation of the findings. Other factors besides the severity of Vitiligo

may play a greater role in determining a patient's quality of life.^{19,20}

4. Conclusion

The results of the regression analysis show that the use of dermatological cosmetics, age, and gender are factors that significantly influence the quality of life of Vitiligo patients. The use of dermatology cosmetics can increase the quality of life score of Vitiligo patients, while age and male gender can reduce the quality of life score of Vitiligo patients. The duration of Vitiligo disease and the severity of Vitiligo do not significantly affect the quality of life scores of Vitiligo patients.

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